



Robert Lightfoot, right, of Marshall's Propulsion Laboratory, talks with representatives of Lockheed Martin Co. about a Russian RD-180 rocket engine to be tested at Marshall this winter. Testing is expected to begin in December in Marshall's West Test Area. The test series will mark the first firing of a Russian-built rocket at a U.S. government facility.
Photo by Emmett Given

Cloud Appointed to Head Marshall's I&PS Office

Sheila Cloud, director of Marshall's Resources Management Office, has been appointed director of Institutional and Program Support.

Since joining the Marshall Center in 1983, Cloud has been extensively involved in developing and executing the NASA budget. In 1989, she served for a year as executive assistant to two center directors and interfaced on institutional matters with Center management. As director of the Resources Management Office, Cloud directed planning for processes leading to the development of the Center's annual budget.

She has received an Agency Financial and Resources Management Improvement Award in recognition of leadership in planning and implementing a full-cost environment at the Marshall Center. Cloud is also the recipient of the NASA Exceptional Service Medal.



Sheila Cloud

First 'Sim' Starts Training for U.S. Microgravity Payload-4 Mission

The first of four simulations bringing together the fourth United States Microgravity Payload (USMP-4) science teams and controllers with Marshall's Spacelab Mission Operations Control is planned for next week.

Scientists and engineers from six universities, the French Space Agency and NASA will conduct five days of training in

preparation for the launch of STS-87 and the USMP-4 science mission. Launch is targeted for Nov. 19.

USMP-4 science teams and payload controllers represent the Marshall Center, Lewis Research Center in Cleveland, Langley Research Center in Hampton, Va., the French Space Agency in

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X-ray Device Promises to Speed Protein Crystal Research

by Bob Thompson

A collaborative effort by NASA, university researchers and industry has resulted in the development of a new X-ray generator to speed the collection of protein structure information from crystals grown aboard the International Space Station.

Researchers grow protein crystals in space because the crystals typically grow larger and with greater purity in the near-weightless environment of low-Earth orbit, providing researchers better data for structure-based drug design.

The X-ray device is a critical component of the X-ray Crystallography

Facility, a payload planned for the International Space Station and being designed and developed by the University of Alabama in Birmingham's Center for Macromolecular Crystallography.

Using the X-ray generator in the commercially developed X-ray Crystallography Facility will alleviate the need to return space-grown crystals to Earth for further analysis. By measuring and mapping the crystal's structure in space, researchers will avoid exposing the delicate crystals to the rigors of space travel, and important research data will be available to scientists much faster.

The X-ray generator, developed by

Bede Scientific Instruments Ltd. in Durham, Great Britain, is a compact, lightweight, low-power X-ray device about the size of a small suitcase and is capable of generating high-brightness X-ray sources for protein crystal growth research. The generator focuses X-ray beams approximately one-half millimeter in diameter on the targeted protein crystal, allowing researchers to analyze and model the three-dimensional structure of protein molecules in detail, previously only possible with sources using 60 times the power.

Dr. Larry DeLucas, Director of the

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Combined Federal Campaign Tours Set to Start Sept. 15

The Marshall Center's 1997 Combined Federal Campaign (CFC) bus tours to recipient agencies will begin on Sept. 15.

Marshall employees, including on-site contractors, will be able to tour Christmas Charities, Family Services, the Association for Retarded Citizens, the American Red Cross, United Way in Athens, Boy Scouts, Girls Incorporated, YMCA, Tennessee Valley Rehab Center in Decatur, the Food Bank of North Alabama and the American Cancer Society.

Two buses (A and B) will stop at Building 4610 at 8:15 a.m., and Building 4203 (north loop) at 8:30 a.m. on Sept. 15, 17, 22, 23, 24, and 25. On Sept. 16 and 18, there will be only one bus to Decatur or Athens. The first week tour schedule is:

Sept. 15 Bus A — Christmas Charities and Family Services Center; **Bus B** — Association for Retarded Citizens and American Red Cross

Sept. 16 Athens Tour — United Way in Athens

Sept. 17 Bus A — Boy Scouts and Girls Incorporated; **Bus B** — YMCA, North and South side

Sept. 18 Decatur Tour — Tenn. Valley Rehab Center, Limestone/Morgan Counties

Meanwhile, the Community Service Day scheduled for Sept. 13 from 9 a.m. to 1 p.m. still needs volunteers, according to



Bill Evans and other members of the Combined Federal Campaign (CFC) executive committee browse materials received during a tour recently of the American Cancer Society, one of the CFC recipient agencies.

coordinator Jeff Hamilton.

"The Marshall community is already generous in its participation in the CFC," said Hamilton. "The Community Service Day event gives us an opportunity to volunteer our time and service to the Tennessee Valley community."

This year's projects include Christmas Charities, Hope Place, CASA, Habitat for Humanity, and the Boy Scouts.

The CFC kickoff will be Sept. 29.

NASA Board Appointed to Study Main Engine Test Stand Fire

NASA Headquarters Associate Administrator for Space Flight Wilbur Trafton has appointed a major incident investigation board to determine the cause of a fire that occurred on a developmental Space Shuttle Main Engine being tested at NASA's Stennis Space Center (SSC), on Wednesday, Aug. 27.

The fire happened at approximately 2:16 p.m. CDT Wednesday on the A-1 test stand at Stennis. There were no injuries caused by the incident.

The engine being tested at the time,

engine number 0524, was a developmental engine used for testing new engine components. It was not a flight engine. At 568 seconds into a planned 710-second test, the engine was operating at 109 percent power when the turbine discharge temperature exceeded its limits. This caused an automatic cutoff of the engine. At that point, or subsequent to it, a fire occurred on the stand.

What impact, if any, this incident will have to the upcoming STS-86 launch date is currently unknown. However, the

Space Shuttle Main Engine (SSME) configuration used in the test was significantly different than the current SSME configuration on Shuttle Atlantis.

The chairman of the incident investigation board will be Sid Saucier, Propulsion Lab Director at the Marshall Center. His alternate will be Len Worlund, Space Shuttle Main Engine Chief Engineer, MSFC. Serving as members on the board will be Tony Fiorucci, dynamics, MSFC; Parvin Aggarwal, stress, MSFC; Mark Neely, engine systems, MSFC; Mike Purvey, software and controls, MSFC; Rob Lambdin, materials and processes, MSFC; Tom Hartline, safety and mission assurance, MSFC; Tom Rieckhoff, photographic engineering analysis, MSFC; Jim Taylor, test operations, SSC; Carl Kotila, flight systems analysis, Johnson Space Center; and Otto Goetz, consultant with Pratt & Whitney. Other individuals may be added to the board as required. The incident board is expected to report its findings to senior NASA managers in about 45 days.

Entertainment, Events Slated for Oct. 4 Picnic

by Carole McLemore, Picnic Committee

The entertainment and events slated for this year's Marshall Center picnic will surely provide a fun day for all ages with varying tastes.

Katherine Dines, famous for her award-winning children's Hunk-Ta-Bunk-Ta music and songwriting, has been described by five-year old expert Allison

Stewart as "Nobody's more better than Katherine Dines". She will delight and entertain the young and the young-at-heart on the Children's Stage from 11 a.m. to noon and again at 12:45 p.m. with her songs, stories, and engaging messages. In addition to Dines, Murphy the Magician returns again this year to perform his

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Mir Crew Preparing for Spacewalk

Mir 24 Commander Anatoly Solovyev, Flight Engineer Pavel Vinogradov and U.S. astronaut Mike Foale this week continued preparing for a scheduled spacewalk set for Saturday, Moscow time (Friday night, U.S. time) to examine exterior damage to the Spektr module from the June 25 collision with a Progress resupply ship. Foale is being considered by NASA officials as a possible participant in the spacewalk with Solovyev. On Thursday, U.S. and Russian managers expect to hold a joint readiness review to give final approval for the spacewalk, and to determine the spacewalk's participants.

Earlier this week, the cosmonauts spent the day preparing the Orlan-M space suits which will be worn during the planned five-and-a-half-hour spacewalk. Solovyev and Foale then donned their suits and performed a rehearsal of Saturday's spacewalk which is also intended to install handrails on Spektr for future external repair work and to begin modifications to hardware on the Kvant-2 module.

X-Ray Generator

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Center for Macromolecular Crystallography and a former Space Shuttle payload specialist, said that having an X-ray facility aboard the Space Station will improve our understanding of effects of low-Earth orbit on crystal growth and contribute to accelerated drug development.

"Providing a three-dimensional structure is what we're after," said DeLucas. "Once we determine a protein structure, it provides a wealth of information regarding the mechanism of the protein and, in many cases, this information is used to design new and more effective pharmaceuticals. This new X-ray facility will help to speed the process by allowing scientists to use the Space Station to grow the crystals and collect the X-ray data in space."

Current X-ray crystallography facilities are about the size of an automobile. The new system being developed for the Space Station will fit into a single space station rack — about the size of a household refrigerator — and will produce the same intensity of X-rays.

Bede Ltd. built the new X-ray instrument in collaboration with the Center for Macromolecular Crystallography, which is under contract to the NASA Microgravity Research Program's Space Product Development Office at the Marshall Center.

A unique aspect of the X-ray crystallography facility is its commercial development approach. The funding for further development of this facility will be provided by non-U.S. government sources, thereby reducing the cost for taxpayers.

DeLucas said, "I can't begin to tell you how much we are looking forward to continuing our work aboard the new Space Station. This brings us one step closer to making the facility a reality. With the X-ray facility onboard, we'll have a new and powerful potential tool to address many public health problems."

Marshall Center Picnic

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magic show. The Hoot & Holler Cloggers appear on the main stage at 10 a.m. after the children's parade. Also at 10 a.m. the midway, bingo booths, and Moonwalk will open. Besides the popular Haystack Hunt, Basketball Free-Throw Contest and Paper Missile Launch, two new events have been added that will test competitors' skills and provide entertainment for spectators. These are the Balloon Relay and Humpty Dumpty Race. All game participants receive prizes regardless of finishing place except for the Moonwalk. So come on out and have some fun and laughs. And for those sports fanatics who refuse to miss a day of college football, the Sports Pavilion is back this year with big screen TV's and a DDS system so you can attend the picnic *and* see the games. Stay tuned to the Star for next week's announcement of the headliner entertainment act and opening band.

Don't Forget to Order Your T-Shirts

What's a picnic without a picnic t-shirt? Order forms for the 1997 picnic t-shirts have been sent out, and the deadline for ordering from the NASA Exchange is Sept. 5. The picnic logo and theme "Living the Dream" is featured on the back in black and red with red writing on the front left chest. Sizes small to X-large are \$8 each, and XX-large and XXX-large are \$9 and \$10, respectively.

USMP-4 'Sim'

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Toulouse, France, the University of Florida in Gainesville, Stanford University in Stanford, Calif., the National Institute of Standards and Technology in Gaithersburg, Md., Rensselaer Polytechnic Institute in Troy, N.Y., the University of Alabama in Tuscaloosa, the University of Alabama in Birmingham, the University of Iowa in Iowa City and the Universities Space Research Association.

"It's great to bring the USMP-4 team together for this important training opportunity," said Mission Manager Sherwood Anderson of the Flight Projects Office at Marshall Center.

"We're looking forward to exercising the science and payload teams and getting ready for the real mission."

"USMP-4 will continue the high quality telescience and glovebox experiments that have made past USMP missions so fruitful," said Mission Scientist Dr. Peter Curreri of the Marshall Space Sciences Laboratory. "USMP-4 will study basic physical phenomena in solidification and crystal growth materials sciences, combustion science and fundamental physics without the influence of gravity."

Curreri noted that previous USMP science experiments have added a great deal to the understanding of semiconductor and other manufacturing processes, the properties of metal alloys, combustion science and our knowledge of the microgravity environment aboard the Shuttle. "USMP-4 will extend this research to new materials and processes," explained Curreri.

The Marshall Center manages the USMP-4 mission as the Lead Center for NASA's Microgravity Research Program.

Employee Ads

Miscellaneous

- ★ Turbo 350 automatic transmission, complete \$50; King trombone and case \$550. 534-8186
- ★ 7000 BTU carrier window air conditioner \$170. 881-6040
- ★ Alexvale, burgundy/green/mustard striped couch with accent pillows \$200. 350-7461
- ★ Black lacquer wall unit furniture, queen bookshelf, pedestal, vase, abstract print, sell separately. 551-1007
- ★ Antique manual Underwood typewriter in original case \$50 o.b.o.; Two matching love seats \$150 464-0449
- ★ Atlanta Braves tickets, field level, Sept. 16 vs. SF, 4 each \$20. 837-1544
- ★ 55 gallon aquarium \$50; large folding metal dog cage \$45. Call after 6 p.m. 851-6014
- ★ Russian Baikal double barrel, 12 ga. shotgun. Outside hammers, full and modified chokes \$250 firm. 534-8186
- ★ Wood dog house for large dog(s) \$20. 881-0557
- ★ Glasstream 188 Caravelle boat, 175hp, w/trailer \$6,900. 722-0417
- ★ 12-speed Nashbar City-LP bike. Cantilever brakes, avocet saddle and more \$195. 533-5428
- ★ Huntsville symphony tickets for September 20th. Two tickets for \$30. 882-6124
- ★ Antique mahogany Sheraton 9 pc. dining room suite \$1,500. 232-8804
- ★ Camper shell for full size swb pickup, fits pre-1988 General Motors, fiberglass, blue, \$100.
- ★ 21" color TV (cabinet) \$50. 837-2792
- ★ Honda HT-R3009 riding mower, 30 inch cut. Two new bags \$500. 864-0075
- ★ MacIntosh 6205CD 16MB RAM, 1GB HD 15", 28.8K modem, 1 year old, lots of software \$900. 721-0078
- ★ Bermuda hay square bales - \$2.50, you pickup. 837-5292
- ★ Nordic Track Pro model skier \$225 or best offer. 586-4831
- ★ 22-quart aluminum Deluxe Presto Pressure cooker canner. Used one season \$50. 881-2027
- ★ 30 Gallon fish tank w/supplies and stand \$40. 859-6569
- ★ Rabbit hutch, large, cedar \$90. 828-1127

Vehicles

- ★ 1992 Eagle Talon, non-turbo model, A/C, am/fm stereo cassette, PW, PD, PL, 114K miles \$5,200. 461-0915
- ★ 1991 Mazda RX-7 Coupe, 57K miles, security, sunroof, etc. 881-0645
- ★ 1988 Honda Accord, 4-door, automatic, PW, PL, A/C \$3,650. 895-9196
- ★ 1991 Nissan Sentra XE, 4-dr., air, PS, cruise, 5-spd, 100K miles \$4,200. 882-1833

- ★ 1985 Pontiac Sunbird J2000, 5-spd, manual transmission, 77K miles, one-owner \$1,200. 971-1511
- ★ 1990 Pontiac Grand-Am, quad-4, 2-dr., automatic, 92K miles, PB, PS, tilt, cruise, am/fm/cass., a/c \$3,450. 753-2278
- ★ 1993 Eagle Vision, under warranty \$8,200 o.b.o. 837-3535
- ★ 1995 Nissan Maxima SE, all available options, 41K miles. 882-5227
- ★ 1983 CJ-7, 84K miles, four wheel drive, PS \$3,950. 350-0682

Wanted

- ★ Surveying level or transit. 881-6040

Center Announcements

- ☛ **Wanted** — Volleyball and softball teams to compete in the MSFC 1997 picnic. Registration is now open and tournaments begin Sept. 29th. To sign-up for softball contact Rhonda Pepper at 544-5432 or for volleyball contact either Dana Tipton at 544-7879 or Ketela White at 544-7179.
- ☛ **Senior/NASA Day** — The EEO office is coordinating the High School Senior Day/NASA Day at Alabama A&M on Nov. 8 at 1:30 p.m. Asking for NASA and alumni volunteers from both A&M and Tuskegee to assist in giving the students and general public information about MSFC roles and missions. For additional information contact Alice Sams at 4-0374 or Willie Love at 4-0088.
- ☛ **Breakfast** — Facilities retirement breakfast at Shoney's at corner of University and Parkway, 8 a.m. Sept. 9. 544-7892
- ☛ **EWS** — The monthly test of the Emergency Warning System has been scheduled for Sept. 4 at 3 p.m. This is an audio test only. DO NOT evacuate to protective areas. If severe weather is occurring at this time, the test will be rescheduled to a late date. Safety coordinators/monitors should sent reports of malfunctioning speakers to AB11/Emergency Preparedness Officer, 544-5187, as soon as possible.
- ☛ **Retired Senior Volunteer Program** — The Huntsville/Madison County Senior Center will participate in "Make a Difference Day" on Oct. 27 from 7 a.m. to 6 p.m. at the Senior Center. Contact Darthy Barnett for more information.
- ☛ **Toastmasters** — The MSFC Toastmasters Club will meet on Sept. 9 at 11:30 a.m. in Bldg. 4610 cafeteria conference room. For more information call Debbie Hagar at 5-4992 or Lee Johns at 4-5142.
- ☛ **Mail Handlers** — A federal representative from the Mail Handlers Benefit Plan will be at Marshall on Sept. 12, Bldg. 4202/Rm. 114, from

8:30 to 10:30 to assist employees with claims or questions

- ☛ **Big Spring Jam** — Three-day, discount tickets for Huntsville's Big Spring Jam are available at the Marshall Exchange for \$15. Admission at the gate is \$10 a day or \$20 for a weekend pass. The Sept. 26-28 festival will celebrate the South's musical and artistic heritage.
- ☛ **American Express Cards** — The new American Express cards will be mailed at the end of September to employees who have government-issued cards expiring in October. Employees with expiring cards who do not receive a new card by Oct. 10, or need to report a change of address, should contact American Express at (800) 492-4922. For more information contact Tina Walker at 4-7291.

Job Opportunities

- CPP 97-55-CL, AST, Telecommunications, GS-855-14, I&PS, Information Systems Services Office, NASA ADP Consolidation Project Office.** Closes Sept. 3.
- CPP 97-58-CL, AST, Data Systems, GS-854-14, I&PS, Information Systems Services Office, Systems Engineering and Applications Division.** Closes Sept. 3.
- CPP 97-107-CV, Management Analyst, GS-343-11, Flight Projects Office, Management Support Office.** Closes Sept. 3.
- CPP 97-109-TH, AST, Technical Management, GS-801-14, S&E, Systems Analysis and Integration Lab., Technical Staff Office.** Closes Sept. 3.
- CPP 97-111-RE, Public Affairs Specialist, GS-1035-11, Public Affairs Office, Public Services Office.** Closes Sept. 3.
- CPP 97-113-TH, AST, Flight Vehicle Atmospheric Environment, GS-861-14, S&E, SA&I Lab., Systems Engineering Div., Electromagnetic & Aerospace Environment Branch.** Closes Sept. 4.
- CPP 97-114-TH, AST, Aerospace Flight Systems, GS-861-14, S&E, SA&I Lab., Systems Engineering Div., Systems Requirements & Verification Branch.** Closes Sept. 4.
- CPP 97-115-TH, AST, Flight Systems Test, GS-861-14, S&E, SA&I Lab., Systems Test Div., Development & Environmental Test Branch.** Closes Sept. 4.
- CPP 97-116-TH, AST, Telemetry Systems, GS-855-14, S&E, SA&I Lab., Systems Engineering Division, Electromagnetics & Aerospace Env. Branch.** Closes Sept. 4.
- CPP 97-123-SH, Aerospace Engineering Technician, GS-802-12, Propulsion Lab., Propulsion Test Div., Propulsion Test Mechanical Systems Branch.** Closes Sept. 4.
- CPP 97-126-SH, Supv. AST, Liquid Propulsion Systems, GS-861-15, Propulsion Lab., Propulsion Research & Technology Division.** Closes Sept. 5.

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